

MUZICHUK, F. M., inzh.

Improving technical and economic indices in tractor operations.
Mekh. sil'. hosp. 12 no. 10:6-7 0 1961. (MIRA 14:11)
(Tractors)

MUZIK, F.
CZECHOSLOVAKIA/General Problems of Pathology - Tumors.

T-5

Abs Jour : Ref Zhur - Biol., No 1, 1958, 3086

Author : Muzik, F.

Inst :

Title : Influence of Lanosterol and Chicken Embryonal Extract Upon
the Course of 3,4-benzpyrene Induced Skin Carcinoma in
Mice.

Orig Pub : Ceskosl. onkol., 1956, 3, No 4, 313-323

Abstract : The skin surface of strain "H" mice was smeared with one
of the following solutions twice a week: 0.5% benzpyrene
in olive oil, the same with 23% lanosterol or 0.5% benz-
pyrene in acetone with 23% lanosterol. During the entire
period of topical applications a study was made of micro-
and macroscopic epidermal changes. 4 stages were distin-
guished: (1) a slight alopecia and an isolated epidermal
proliferation, (2) distinctly seen alopecia and a diffuse
epidermal thickening, (3) a significant alopecia,

Card 1/3

~~MOYZIK~~, ~~František~~ [Mužik, František], rukovoditel'

Reorganizing schools on technical principles is the task of the whole community. Politekh.obuch. no.2:77-79 F '59. (MIRA 12:3)

1. Shkol'naya sektsiya Soveta Khomutovskogo rayonnogo Natsional'nogo Komiteta (Severo-Zapadnaya Chekhoslovatskaya Sotsialisticheskaya Respublika)..

(Czechoslovakia--Technical education)

2218. *Beilstein halogen test.* M. Jurček and F. Mušik (*Coll. Trav. chim. Tehkeget.*, 1980, 18, 234-236).—Certain compounds, free from halogens, impart a green colour to the Bunsen flame if heated on a strong Cu wire. The test may be regarded as conclusive if a green flame results when the compound is introduced into the flame on a strong Pt wire underneath a hot Cu gauze.

H. WASH

~~Ferdinand, Muzik~~
MUZIK, Ferdinand

Aromatic diazo compounds. VII. Coupling with *m*-phenylenediamine. Ferdinand Muzik and Zdenek J. Allan
(Chem. Research Inst., Pardubice-Rybitvi, Czech.). Col-
lection Czechoslov. Chem. Commun. 18, 385-403(1953).--See
CA. 47. 8609a. B. H.

MUZIK, F.

ALLAN, Z.J.; MUZIK, F.

Aromatic diasocompounds. Part 12. Identification of primary aromatic amines from the absorption spectra of derived azo dyes [with summary in English]. Sbor.Chekh.khim.rab. 18 no.5:663-678 0 '53. (MLRA 7:6)

1. Laboratory of Organic Technology, Organo-synthetic Research Institute, Pardubice-Rybitvi. (Azo dyes) (Amines) (Absorption spectra)

MUZIK F
CZECH

Aromatic diazo compounds. XII. Identification of primary aromatic amines by means of the absorption spectra of the corresponding azo dyes. *Journal of the American Chemical Society*, 75, 380-91 (1953); cf. C.A. 47, 11489-90. Identification of aromatic primary amines is based on their diazotization, coupling with R-salt (or the resulting azo dyes). The conditions of the diazotization and coupling are thoroughly described and absorption max. of almost 200 azo dyes are listed. The effect of constitution and especially of the coplanarity of azo groups on the absorption spectra is followed. Absorption max. of the azo compds. derived from the amines and the R-salt (in *m*): 5-aminotetrazole, 481; 4,5-H₂N(MeO)₂C₆H₃CN, 493; 103; 2,1,3-H₂NC₆H₃Me, 520.5, 499; 1-amino-2,4-dibromoa-thraquinone, 526; p-Me₂NC₆H₄NH₂, 528, 405; PhNH₂, 528, 490; m-H₂NC₆H₄CO₂H, 527, 490; m-O₂NC₆H₄NH₂, 527, 497; p-EtNC₆H₄NH₂, 528, 496; p-EtNH₂C₆H₄NH₂, 528, 497; p-EtPhCH₂NC₆H₄NH₂, 528, 498; 4-(4-aminophenyl)-morpholine, 528.5, 496.5; N-acetyl-N-cyclohexyl-p-phenylene-diamine, 529, 495; p-PANHC₆H₄NH₂, 529, 496; m-H₂N-C₆H₄NHAc, 532, 499.5; 1,4-(H₂N)₂C₆H₃(p-HOC₆H₄)NH₂, 533, 500; (p-H₂NC₆H₄)NH₂, 534, 496; o-MeC₆H₄NH₂, 534, 501; 4,5,6-Cl₃(H₂N)₂C₆H₃OH, 534, 504; oxalyl-m-phenylene-diamine, 534.5, 500.5; m-MeC₆H₄NH₂, 534.5, 501; 3,4-Cl₂(Et₂N)₂C₆H₃NH₂, 534.5, 501; m-Cl₂C₆H₃NH₂, 535.5, 503; (m-H₂NC₆H₄)NH₂CO, 536, 490; o-H₂NC₆H₄OH, 538; 5,2-H₂N(HO)₂C₆H₃CO₂H, 539, 505; 5-amino-2-phenyl-1,3,4-oxadiazole, 539, 506.5; 2,5-(H₂N)₂C₆H₃Cl, 540, 493; p-MeC₆H₄NH₂, 540, 506; o-H₂NC₆H₄CO₂H, 542, 507; 3,5-Cl₂(H₂N)-C₆H₃Me, 542, 508; o-Cl₂C₆H₃NH₂, 542, 508; o-H₂NC₆H₄OH, 543; p-H₂NC₆H₄OH, 543, 505; p-Cl₂C₆H₃NH₂, 543, 510; p-H₂NC₆H₄NHAc, 543.5, 510; p-O₂NC₆H₄NH₂, 543.5, 510.5; p-H₂NC₆H₄CO₂H, 544, 512.5; 3,4,5,6,7,8-(H₂N)₂C₆H₃OH, 545, 500; 2,4-(H₂N)₂C₆H₃OH, 545, 515, 633; 3,2,5-Me(CH₂CH₂N)₂C₆H₃CO₂H, 545.5, 511.5; 2,4-diaminobiphenyl, 547, 492.5; o-PhC₆H₄NH₂, 547, 509; 2,4-(Me)₂C₆H₃NH₂, 547, 510; 4,5,5-HO(H₂N)₂C₆H₃Me, 548; (1-H₂N)₂C₆H₃, 548, 499; p-H₂NC₆H₄OMe, 549, 315; 4,3-II₂(H₂N)₂C₆H₃Me, 549.5; 2-H₂NC₆H₄OPh, 549.5, 519.5; o-HO₂CCONHC₆H₄NH₂, 550, 515.5; 4,2-Cl₂(H₂N)₂C₆H₃, 550, 518.5; p-H₂NC₆H₄OH, 550, 520; 6,2,4-Cl₃(H₂N)-C₆H₃OH, 550.5, 513.5; 4,2-Cl₂(H₂N)₂C₆H₃OPh, 551; 1,4-(H₂N)₂C₆H₃Me, 551, 516; 5,2-Cl₂(H₂N)₂C₆H₃Me, 551, 516; 4,2,5-Me(CH₂CH₂N)₂C₆H₃CO₂H, 551.5, 519; (p-H₂NC₆H₄)₂CH₂, 552, 516, 488.5; o-O₂NC₆H₄NH₂, 552, 519; 2-aminoanthraquinone, 553, 520; 3-aminanthraquinone, 554, 514; 5,6-Me₂(H₂N)₂C₆H₃CH₂, 554.5, 520.5, 492; 1,2,5-Me₃(H₂N)₂C₆H₃CH₂, 555, 517.5, 488; 2,5-Cl₂C₆H₃NH₂, 556, 522.5, 492; 3-(2-MeC₆H₄O)₂C₆H₃NH₂, 556, 524; 1,2-Cl₂(H₂N)₂C₆H₃, 557, 524; p-H₂NC₆H₄OPh, 557.5, 522; 1,2-Me₂(H₂N)₂C₆H₃, 558, 521; 1,2,4,5-Me₄(H₂N)₂C₆H₃, 558, 524; (p-H₂NC₆H₄)NH₂CO, 558, 532, 495; 1-amino-3-methylanthraquinone, 558.5, 529; 1-(4-amino-4-biphenyl)-3-methyl-

[illegible]

(CON'T)

ENCK J. ALIAN

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$C_6H_4(SO_2H)_2$, 564, 623, 660; $1,4-H_2N(HO)C_6H_4NH_2CO$, 563, 587, 601; $5,5,6,7-HO(H_2N)_2C_6H_4SO_2H$, 563, 630; $2,5,7-H_2N(HO)C_6H_4SO_2H$, 563, 623; $1,3,4,6-HO(H_2N)_2(HO)C_6H_4NH_2CO$, 563.5, 627.5; $5,5,5-Me(HO)(H_2N)C_6H_4SO_2H$, 565, 631; $5,5,5-PMe(H_2N)C_6H_4SO_2H$, 568; $2,6-H_2NC_6H_4SO_2H$, 569, 631, 492; $1,6-H_2NC_6H_4SO_2H$, 569, 533, 496; $5,5,7,6-HO(H_2N)_2C_6H_4SO_2H$, 573, 636, 603; $4,5,6-HO(H_2N)_2C_6H_4SO_2H$, 575, 648; $1,7-H_2NC_6H_4SO_2H$, 570, 637; $1,3,4,6-MeO(H_2N)(HO)C_6H_4$, 570.5, 637; $1-(4-aminophenyl)-6-methyl-7-benzothiazolylsulfonic acid$, 577, 538; $1,3,3,6-H_2N(HO)C_6H_4(SO_2H)_2$, 578, 623, 640; $5,5,5,4-Me(H_2N)_3C_6H_4SO_2H$, 578, 537, 494; *primulinmonosulfonic acid*, 578, 540; $2-(4-aminophenyl)-6-methylbenzothiazole-5,7-disulfonic acid$, 581, 546.5; $1,4-H_2NC_6H_4SO_2H$, 581.5-635, 545; $1,4-H_2N(HO)C_6H_4CH_2CH_2$, 583; $1,3,6-H_2NC_6H_4(SO_2H)_2$, 584, 643; $2-(4-aminophenyl)-6-methylbenzothiazole$, 584, 547; $1,5-H_2NC_6H_4SO_2H$, 589, 554.5; $2,2,6-H_2NC_6H_4(SO_2H)_2$, 590, 551, 522; $1,6-H_2NC_6H_4SO_2H$, 592, 581; $2,2,5-HO(H_2N)_2C_6H_4SO_2H$, 609, 568; $1,4-H_2N(HO)C_6H_4$, 615, 577; $1,3,3,6-H_2N(HO)C_6H_4(SO_2H)_2$, 623, 578, 540; *benzidine-2,2'-sulfone*, 626.5, 582.5, 644; *benzidine-3,3'-disulfone-5,5'-disulfonic acid*, 630, 581.5; *Azo dyes from diazotized amines and resorcinol: 1-(3-methoxyphenyl)-3-methyl-4-aminopyrazolin-5-one*, 465; $1,1,5-H_2N(HO)C_6H_4SO_2H$, 635, 601; $1,3,7-BzNH(H_2N)C_6H_4OH$, 540, 494; $1,2,3,8-H_2N(HO)C_6H_4(SO_2H)_2$, 540.5, 507; $1,1,4-H_2N(HO)C_6H_4SO_2H$, 543.5, 507; $2,1,5-H_2N(HO)C_6H_4SO_2H$, 548, 513, 493; $1,2,6-H_2N(HO)C_6H_4SO_2H$, 546, 523, 494; $1,1,1,6-H_2N(HO)C_6H_4(SO_2H)_2$, 551, 531.5, 497; $1,7-H_2NC_6H_4SO_2H$, 550.5, 549.5; $1,1,4-H_2N(HO)C_6H_4SO_2H$, 583, 515.5; *4-chloro-3-hydroxy-2-naphthylamide*, 592.5, 554; $1,3,3,6-HO(H_2N)(HO)C_6H_4NH_2CO$, 604, 502, 491.5; $1,3,1,4-H_2N(PhNH)(HO)C_6H_4SO_2H$, 603, 553. Also in Collection: *Czechoslov. Chem. Commun.* 18, 663-77(1953) (in Russian).

MUZIK, FERDINAND

CZECH

Aromatic diazo compounds. XV. Aromatic compounds
with diazo double bonds. Ferdinand Muzik and J. J. C. I.
Collection Czechoslovak Chem. Commun. 16, 953-8
(1954) (in Russian).—See C.A. 49, 2456. U. I. C.

~~Ferdinand Musik~~
 muzik, Ferdinand

Aromatic Diazocompounds. XIV. C-phenylation of p-phenylenediamine and the mechanism of nuclear arylation.
 Zdeněk T. Allan and Ferdinand Musik (Vědecký ústav
 org. syntézy, Pardubice, Československo). Chem. Listy
 48, 64-66 (1954); Cl. C.A. 48, 3221c. -- Negatively substituted diazonium salts react easily with $p\text{-NH}_2\text{C}_6\text{H}_4\text{NH}_2$ (I) to give tri- and tetraaryl-p-phenylenediamine. The possible mechanism of this new reaction is discussed, and some new compounds are prepd. Treating a soln. of 10.8 g. I in 200 ml. H_2O and 80 ml. 2.5N HCl with 105 g. ice and 180 ml. (0.1 mole) of a soln. of $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl}$ gave, after stirring approx. 35 min., 12.2 g. (81%) 3,6-diamino-1,2,4,5-tetrakis-(p -nitrophenyl)benzene (II), m. 224-30° (sintering). II (17.7 g.) digested with cold 50 ml. 94% EtOH, filtered, washed with EtOH, and reduced with 155 g. $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ in 270 ml. concd. HCl and 100 ml. EtOH gave, after heating 10 min. at 70°, 25 g. of a complex which yielded by the electrolysis and pptn. with HCl, HCl salt of 3-amino-1,2,4-tris- p -aminophenyl carbazole. The reaction of 10.8 g. I with $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl}$ gave 12.8 g. 3,6-diamino-1,2,4-tris-(p -nitrophenyl)benzene, not melting below 300°. Stirring a soln. of 5.4 g. I in 20 ml. 2.5N HCl with 50 g. ice and 0.05 mole $2,5\text{-Cl}_2\text{C}_6\text{H}_3\text{N}_2\text{Cl}$ overnight, filtering the ppt. and washing it with H_2O and aq. NH_3 , gave 6.35 g. 3,6-diamino-1,2,4-tris-(2,5-dichlorophenyl)benzene, sintering toward 200°. A procedure for the volumetric detn. of I by titration with NaNO_2 is described. M. Hudlický

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MUZIK, FERDINAND

Aromatic diazo compounds. IV. Aromatic compounds with fixed double bonds. Ferdinand Muzik and Zdeněk J. Aškan (Výzkumný ústav chemického průmyslu, Brno, Czech.). *Chem. Listy* 48, 221-5 (1964); cf. *C.A.* 49, 1004a. α -Aminoazo compds. having the double bond of the benzene ring fixed between the NH_2 and $\text{N}=\text{N}$ groups give different reactions as compared with compds. having the single bond fixed between the 2 groups. 6-Phenylazo-6-amino-2-phenyl-4-methyl-2H-benzotriazole (I) (*loc. cit.*) (21.5 g.) suspended in a warm (40°) mixt. of 100 ml. EtOH and 25 ml. 37% HCl was poured into 25 g. $\text{SnCl}_4 \cdot 2\text{H}_2\text{O}$ in 35 ml. 37% HCl; the temp. rose to 60°, and the deposited 6-phenylhydrazino-5-amino-2-phenyl-4-methyl-2H-benzotriazole (II) HCl salt was filtered and washed with Et.O. The free II obtained in 74% yield (16.1 g.) by treating II.HCl in aq. MeOH with aq. NaOH (12 g.) and 1 g. Na_2SO_3 and crystd. from PhMe and then $\text{CHCl}_3\text{-EtOH}$, m. 210.5°. I (10 g.) in 150 ml. EtOH and 30 ml. 2.5N HCl, treated with 50 g. $\text{SnCl}_4 \cdot 2\text{H}_2\text{O}$ in 70 ml. warm (35°) 37% HCl and re-

fluxed 30 min. gave 8.8 g. 1-amino-3-methyl-2-phenyltriazolo[5,4-c]carbazole (III) HCl salt and 0.51 g. (20%) PhNH₂. Free III, m. 271-4° (from $\text{C}_6\text{H}_5\text{N-EtOH}$). III does not couple with PhN_2Cl and does not react with phenanthrenequinone. III was also obtained by refluxing II with alc. HCl. Hydrogenation of 3 g. I in BuOH over Raney Ni at 120-5° and 82 atm. gave 47% PhNH₂ and 1.08 g. 5,6-diamino-4-methyl-2-phenyl-3H-benzotriazole which condensed with phenanthrenequinone to the orange phenanthrazine, λ 681, 641 m μ . 4-Phenylazo-5-amino-2-phenyl-3H-benzotriazole (2.8 g.) was dissolved in hot 94% EtOH, mixed with an equal vol. of 37% HCl, the suspension added to 12.5 g. $\text{SnCl}_4 \cdot 2\text{H}_2\text{O}$ in 17 ml. hot HCl, and the sepd. 4,5-diamino-3-phenyl-2H-benzotriazole-HCl transformed with 65% H_2SO_4 to the sulfate, from which the free base, m. 127° (from aq. EtOH) was liberated. Similarly was prepd. 4,5-diamino-2-phenyl-6-methyl-2H-benzotriazole, m. 144°. Diazotized III coupled with 2,3,6- $\text{HO-C}_6\text{H}_3(\text{SO}_3\text{H})_3$ to a violet dye, λ 604, 600 m μ . M. Hudlický

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Aromatic diazo compounds. XVIII. New red and violet direct dyes for cotton derived from benzotriazole. p. 1787

Vol. 48, no. 12, Dec. 1954
CHEMICKE LISTY
Praha, Czechoslovakia

So: Eastern European Accession Vol. 5, No. 4, 1956

MUZIK, Ferdinand

Carbazole derivatives. II. Synthesis of 3,6-dihalocarbazoles and their nitration. Zelený I. Allan and Ferdinand Muzik (Výzkumný ústav org. syntesy, Pardubice-Rybitví, Czech.). *Chem. Listy* 50, 1808-17(1956); cf. C.A. 49, 14733d. — Nitration of 3,3-dibromo- (I) and 3,6-dichlorocarbazole (II) gave in each case 5 nitro compds. out of which 4 were identified (the 1st Roman numeral in the following refers to the dibromo compd., the 2nd, the dichloro compd.). 1-nitro-3,6-dihalocarbazole (III, IV), 1,6-dinitro-3,6-dihalocarbazole (V, VI), 1,6-dinitro-3-halocarbazole (VII, VIII) in which NO₂ group replaced the halogen in position 6, and 1-nitro-3,6,8-trihalocarbazole (IX, X) which was formed by halogenation with halogen released by the transformation of I or II to VII or VIII, resp. The m.ps. of most of the nitro compds. were found higher than reported in the literature. Oxidation of II gave 3,3',6,6'-tetrachloro-N,N'-dicarbazolyl (XI); sulfonation of II followed by nitration gave probably 4,4'-dichloro-2,2',6,6'-tetranitrodiphenylamine (XII). Adding 146 g. Br in 220 ml. CS₂ to a boiling suspension of 75 g. carbazole (XIII) in 600 ml. CS₂ during 2 hrs., filtering off the ppt. with suction at 25°, and washing the ppt. with CS₂ gave 38.4 g. I, m. 211° (from EtOH). Passing 110 g. Cl₂ into 112.5 g, 97% XIII in 1125 ml. CS₂, first at 3°, finally at 46°, filtering the hot mixt. with suction, and washing the crystals with CS₂ gave 71.5 g. II, m. 206° (from EtOH and then AcOH). Evapn. of the filtrate gave 87.5 g. of a mixt. (XIV) of putative 1,6- and 1,8-isomers of II. When the filtrate from XIV was chlorinated with 86 g. Cl₂ during 2.5 hrs. at boiling, 34.8 g. tetrachlorocarbazole, m.

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210° (from PhCl), dichlorocarbazole, m. 181° (from PhCl) (positions of Cl unknown), and a mixt. of di- and trichlorocarbazoles were isolated. II (2.38 g.) in 11 ml. Me₂CO with 0.7 g. KMnO₄ by boiling 15 min. gave 0.49 g. XI, m. 233°, and 1.2 g. of a second crop of XI. Nitration of I in AcOH gave III, m. 205°, after filtration over Al₂O₃ of the soln. contg. crude III and a small amt. of VII in 9:1 PhCl-C₆H₅N. Nitration of III with excess 100% HNO₃ in Ac₂O at 70-80° gave V, m. 325° (chromatographed in PhCl). Milling 18.3 g. I in a ball-mill with 120 ml. H₂O, adding at 80° 40 g. 100% HNO₃, refluxing the mixt. 8 hrs., adding another 40 g. 100% HNO₃, refluxing 3 hrs., filtering off the crystals (17.4 g.), washing, and recrystg. the crude product from PhNO₂ gave VII, m. 356°, V, m. 324°, and IX, m. 273°. Dissolving 11.8 g. II at 50° in 77 ml. PhNO₂, cooling the soln. to 10°, and adding at 10° during 7 min. 2.4 ml. 100% HNO₃, adding, after 2 hrs. at room temp., 2 ml. H₂O, filtering off the crystals with suction, washing them with 10 ml. PhNO₂, and petr. ether, and recrystg. the crude product (9.7 g.) from 27 ml. C₆H₅N gave IV, m. 258°, yellow-orange plates, or needles, according to the manner of cooling. Adding 0.9 ml. 71.2% HNO₃ to 11.8 g. II in 85 ml. AcOH at 70-100°, heating the soln. at 100° 5 min. (sample A), 1 hr. (sample B), or refluxing the soln. 1 hr. (sample C) gave a mixt. in which prevailed IV (A), or VI (B, C). Filtering off the final product (after heating 1 hr. at 100° and refluxing another hr.) at boiling gave 13.5 g. crude VI which, purified by boiling with 400 ml. AcOH, dissolving in 80 ml. PhCl, filtering with C, and pptg. with 160 ml. hot AcOH,

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m. 235-8°. Adding 7 ml. 100% HNO_3 to a soln. of 11.8 g. II in 55 ml. AcOH and 30 ml. Ac_2O during 20 min., refluxing the soln. 1 hr., and filtering off the product with suction (14.1 g.) gave almost pure VI. Nitration of 11.8 g. II in 60 ml. H_2O (with 0.1 g. Nekl BX added) with 10 ml. 100% HNO_3 , heating the mixt. 1 hr. at 100°, adding an addnl. 5 ml. 100% HNO_3 , heating the mixt. 5 hrs. at 100°, filtering with suction, and washing with H_2O gave 12.9 g. of a mixt. of five nitrohalocarbazoles. Dissolving 11.8 g. II at 20° in 160 ml. 97% H_2SO_4 , heating the soln. 15 min. at 100°, 15 min. at 115°, cooling to 20°, adding 11 ml. 100% HNO_3 , heating 20 min. at 45°, adding 50 ml. H_2O , and pouring the product into 500 ml. H_2O gave 12 g. of a compd., not melting below 400°, and blackening above 400° (from PhCl), probably XII. Chromatography of nitrohalocarbazoles over Al_2O_3 in a PhCl soln., and elution with 9:1 $\text{PhCl}-\text{C}_6\text{H}_5\text{N}$ gave 5 zones (color, R_f , and given compd.): violet, 1.0, IX, X; red, 0.85, V, VI; chocolate-brown, 0.55, III, IV; red-brown, 0.2, VII, VIII; yellow, 0.03, unidentified. III. Condensation of 3,6-dihalocarbazoles with formaldehyde. F. Muzik and Z. J. Allan. *Ibid.* 1858-61. —During the purification of 3,6-dibromo- (I) and 3,6-dichlorocarbazole (II) by crystn. from AcOH , very slightly sol. ppts. were isolated which were formed by the reaction of I and II, resp., with CH_2O present in the AcOH used, and identified as 3,3',6,6'-tetrabromo- (III) or 3,3',6,6'-tetrachloro-*N,N'*-dicarbazolymethane (IV). These compds. are suitable for the detn. of CH_2O down to the amts. of 0.002-0.003%. AcH , $\text{CCl}_3\text{CH}(\text{OH})_2$, BzH , and mucochloric acid do not react in this way. Dissolving 3.75 g. I in 150 ml. AcOH , adding at the b.p. aq. CH_2O and a drop of 65% H_2SO_4 , 3/4

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refluxing the mixt. 15 min., cooling the mixt. to 80°, filtering off the ppt., and washing with 20 ml. 94% EtOH and 10 ml. petr. ether gave III, m. at different temps. ranging from 294 to 308° (in a capillary), or 351° (on the Kofler block) (from PhCl-AcOH). Refluxing I or II with AcOH contaminated with CH₂O (0.017%) 5 min. or 30 min., resp., gave III or IV, m. 351° and 350°, resp., on the Kofler block. Nitration of 0.55 g. III with 8 drops of HNO₃ (d. 1.52) 15 min. at 80° in 30 ml. PhNO₂, and pptn. with petr. ether gave 0.37 g. 1,6-dinitro-3-bromocarbazole, and 0.5 g. 1,8-dinitro-3,6-dibromocarbazole. Refluxing 0.3 g. III with AcOH, Ac₂O, and a drop of H₂SO₄ gave N-acetyl-3,6-dibromocarbazole, m. 189° (from 90% AcOH).

M. Hudlicky

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Country : Czechoslovakia G-2
Category : Organic Chemistry. Synthetic Organic Chemistry
Abs. Jour. : Ref. Zhur.-Khimiya No. 6, 1959 19467
Author : Allan, Z. J.; Muzik, F.
Institut. :
Title : Carbazole Derivatives. II. Preparation of 3,6-Dihalogen-Carbazoles and Their Nitration.
Orig Pub. : Sb. chekhosl. khim. rabot, 1957, 22, No 1, 64-75
Abstract : See RZhKhim, 1957, 57514.

Card: 1/1

MUZIK, F.

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 // Aromatic diazo and azo compounds. XXI. New yellow dyestuffs analogous to chloramine yellow. J. Poskocil and Z. J. Allan. XXII. Determination of constitution of Resorix dyestuffs. F. MuZik and Z. J. Allan. (Coll. Trav. chim. Tchecosl., 1957, 22, 548-557, 558-569). XXI. Three new dyes are prepared by the oxidation

with NaClO of the 2-(p-aminophenyl) derivatives of sulphonated 6-methylbenzimidazole, 8-methylbenzimidazole and naphthothiazole. Further analogues of chloramine yellow, with a naphthothiazole grouping, are obtained from 2-(p-aminophenyl)-8-methylbenzimidazole-7-sulphonic acid by diazotization and coupling first with m-toluidine (I) and then with 2-naphthylamine-5,7-disulphonic acid (II), followed by oxidation with CuSO₄; from p-amino-6-sulpho-oxanilic acid by diazotization and coupling with 2-naphthylamine-6-sulphonic acid and oxidation with CuSO₄, followed by further diazotizations and couplings with I and II and oxidation with NaClO; and from benzidine by diazotizations and couplings with I and II and oxidation with CuSO₄. The colouring properties of the new dyes are given. (15 references.)

XXII. Improved methods of finding the constitution of azo dyes are described. These methods are based on splitting by reduction with SnCl₂ and identification of the resulting amines. Electrolytic removal of Sn is done with conc. HCl in the anode compartment. Metallic Sn is filtered off under an applied p.d. to reduce re-solution. Products containing the triazine ring are hydrolyzed with 75% H₂SO₄ at 140-160°. Characteristic reactions with 63% H₂SO₄ are used. Oxidations proceed readily with air in presence of cupric ions. Differently substituted 4-aminopyrazol-5-ones can be identified by the colour of the indophenols formed by oxidative condensation with resorcinol. Some amines and amino-acids can be identified by diazotization, coupling with R salt, and paper chromatography; others are identified as their oxidation products. These methods are used to establish the structures of 19 dyes. (31 references.)
 A. B. DAVENHAM.
 (German.)

RM

MUZIL, F.; ALLAN Z.

"Aromatic diazo and azo compounds. XXII. Research on the constitution of resorfin dyes."
In German.

P. 558. Journal on chemistry and biochemistry issued by the, (Czechoslovak Academy
of Sciences.) Vol. 22, no. 2, Apr. 1957.

SO: Monthly Index of East European Accession (EEAI) LC, Vol. 7, No. 5 May 1958

ROZLA, F.; ALEK, A.

"Derivatives of carbazole." III. Condensation of 3, 6-di-alkoxy carbazole with formaldehyde. In German.

1. 041. Collection of Czechoslovak Chemical Communications. Sbornik chekoslávských chemických Rabot. (Prague, Czechoslovakia) Vol. 22, no. 2, Apr. 1957.

50: Monthly Index of East European Accession (EEAI) LC, Vol. 7, No. 5, May 1958

HUZYI, F.

"Aromatic diazo and azo compounds. XXIII. New syntheses and reaction of triazolobenzenes."

p. 511. (Institute of Applied Physics - Czechoslovak Academy of Science)
Vol. 51, No. 3, March 1957

SO: Monthly Index of East European Accession (EEA) 13, Vol. 7, No. 5 May 1958

MUZIK, F

CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat. Zhur-Khimiya, No 4, 1958, 11348.

Author : Poskocil, J. and Allan, Z. J. and Muzik, F.

Inst :

Title : Aromatic Diazo and Azo Compounds. XXIII. New Syntheses and Reactions of Benzotriazoles (Muzik). XXIV. Oxidation of Azo Dyes to Diazo Dyes (Poskocil and Allan).

Orig Pub: Chem Listy, 51, No 3, 515-528, 529-532 (1957) (in Czech)

Abstract: XXIII. When 38.8 gms HNO_3 ($d = 1.42$) are added dropwise to a solution of 49.4 gms of tosylaniline in 140 ml 98% CH_3COOH at 90-95° gives 39-45 gms N-tosyl-2,4-dinitroaniline (I), mp 161.5°. The addition of a suspension of 0.1 mol I in 100 ml water and 100 ml alcohol to a boiling mixture of 300 ml and 300 gms Fe-filings which has been treated with 20 ml 98% CH_3COOH , followed by the alkalization of the

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CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat Zhur-Khimiya, No 4, 1958, 11348

solution to a diamond-yellow endpoint and filtration of the hot mixture in 165 ml 20% CH_3COOH , gives 25.3 gms of N^1 -tosyl-2,4-triaminobenzene (II), mp 208° (purified via the hydrochloride). The coupling of 0.05 mol II in 500 ml water and 40 ml 2.5N HCL with a solution of 0.05 mol benzenediazonium chloride (III) at $3-5^\circ$, followed by the addition (30 min) of 16.5 gms crystalline CH_3COONa , separation of the hydrochloride and its treatment with a 15% solution of NH_4OH give 14.3 gms 5-benzeneazo- N^1 -tosyl-1,2,4-triaminobenzene (IV), mp 201° (decomp; from petroleum ether + alcohol). The oxidation of a solution of 14.4 gms IV in 8 ml $\text{C}_5\text{H}_5\text{N}$, 390 ml water, and 68 ml 2.5 N NaOH by atmospheric oxygen in the presence of 0.7 gms $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ according to Poskocil and Allan (RZh Khim, 1954, 39453 gives 10.5 gms 5-amino-6-tosylamino-2-phenylbenzotriazol (V), mp $208-$

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CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat Zhur-Khimiya, No 4, 1958, 11348.

tosylamino-5-(4'-methoxyphenyl)-2-phenyl-ang-benzobistria-
zole (X), mp 230° (from benzene). The coupling of X with
p-ClC₆H₄N₂Cl at 15° in C₅H₅N gives 8-(4''-chlorobenzeneazo)-
7-tosylamino-5-(4'-methoxyphenyl)-2-phenyl-ang-benzobistria-
zole (XI), mp 212-213° (decomp; from C₆H₅Cl and alcohol). XI
on oxidation gives 2-phenyl-5-(4'-methoxyphenyl)-8-(4''-
chlorophenyl)-benzobistriazole, bp 430°/12 mm, mp 318° (from
C₆H₅Cl). 5-benzeneazo-N¹-tosyl-1,2,4-triaminobenzene-4'-
sulfonic acid, prepared by a method similar to that used in
the synthesis of IV in the form of a paste (158 gms) by the
coupling of 0.05 mol II with 0.05 mol p-diazobenzene-sul-
fonate (XII) on dissolution in 270 ml water in the presence
of NaOH, followed by oxidation as in the case of IV (the
reaction product is salted out with NaCl and the Na salt
is acidified during boiling) is converted to 5-amino-6-

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CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat Zhur-Khimiya, No 4, 1958, 11348.

tosylamino-2-phenylbenzotriazole-4'-sulfonic acid (XIII), yield 15-18 gms. 13.8 gms XIII and 0.03 mol XII in CH_3COOH (2 hrs) give 6-tosylamino-5-amino-4-benzeneazo-2-phenylbenzotriazole-4', 4''-disulfonic acid which is neutralized (congo red endpoint) and oxidized at 60° by an ammoniacal solution of 20 gms crystalline CuSO_4 with the addition of NaOH. On salting out 21 gms of the trisodium salt of 7-tosylamino-2,5-diphenyl-ang-benzobistriazole-4', 4''-disulfonic acid (XIV) are obtained. The corresponding disodium salt is formed by the acidification of a solution of XIV and crystallization from 66% alcohol. It has been proved by paper chromatography that the coupling of XIV with XII in an aqueous solution of Na_2CO_3 gives 8-benzeneazo-7-amino-2,5-diphenyl-ang-benzobistriazole-

Card : 5/ 11

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CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat Zhur-Khimiya, No 4, 1958, 11348.

obtained, mp 244° (from alcohol). Similarly, using 98% H_2SO_4 , XIII gives 5,6-diamino-2-phenylbenzotriazole-4'-sulfonic acid (XIX), isolated as the Na salt. XIX couples in C_5H_5N with an excess of XII, forming a reddish-brown dye which on the basis of similarity considerations has been assigned the structure 4,7-bis-benzeneazo-5,6-diamino-2-phenylbenzotriazole-4',4'',4''' trisulfonic acid. 0.563 gm VIII in 4 ml C_5H_5N and 50 ml alcohol react with 5.16 mmol III to give 1 gm 4,7-bis-benzeneazo-5,6-diamino-2-phenylbenzotriazole (XX), which on oxidation with $CuSO_4 \cdot 5H_2O$ in C_5H_5N is converted to IX. XX in 30% CH_3COOH ($\sim 20^{\circ}$, 1 hr) splits off both amino groups to form 4,7-bis-benzeneazo-5,6-dihydroxy-2-phenylbenzotriazole. The coupling of 1.9 gm V with a solution of 11 mmol III in 100 ml C_5H_5N at -8° followed by dilution of the re-

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CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat Zhur-Khimiya, No 4, 1958, 11348.

mp 222.5° /TN: the prefixes ang- and lin- apparently refer to the angular and linear configuration of the benzobistriazole group (from 98% CH₃COOH), which on heating in 98% H₂SO₄ (90°) is converted to 5-H-2-phenyl-lin-benzobistriazole (mp not given) which is identical with the earlier prepared compound (K. Fries and E. Roth, Liebigs Ann Chem, 382, 335 (1912)). The addition of a solution of HNO₃ to an alcoholic or aqueous suspension of XIII followed by acidification gives the Na salt of 5-tosyl-2-phenyl-lin-benzobistriazole-4'-sulfonic acid which on refluxing in 2.5 N NaOH gives the Na salt of 5-H-2-phenyl-lin-benzobistriazole-4'-sulfonic acid; the latter is also formed by the action of HNO₃ on XIX. 0.02 mol of tetra-azotized benzidine are coupled at 0-5° with 0.0216 mol

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CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry. G-2

Abs Jour: Referat Zhur-Khimiya, No 4, 1958, 11348.

Na-salicylate, NaOH is added until the pH is brought to 7.5, and the reaction mixture treated with 0.0217 mol II in 100 ml water and 9 ml 2.5 N HCl, the solution is made alkaline (diamond yellow endpoint) with 2.5 N Na₂ CO₃; after 12 hrs a diazo dye is isolated which on air oxidation at 40° in alkaline medium in the presence of 0.4 gm crystalline MnSO₄ and 0.5 gm CuSO₄ · 5H₂O followed by acidification gives benzotriazole azo dyes. All mp reported above are corrected.

XIV. It has been established (by the air oxidation of azo dyes obtained from 1-diazo-2-naphthol-4-sulfonic acid (XXII) and resorcinol (XXIII) or by the oxidation of naphthols (see reference above)) that dyes obtained from isomers of XXII., i.e., from 1,2,5-,

Card : 10/11

MUZIK, FERDINAND

✓ Carbazole derivatives. IV. Preparation of 3,6-dichloro-1,8-diaminocarbazole. Ferdinand Muzik, Zdeněk L. Al-
 lan, Jaroslav Postolil, and J. Foastala (Výzkumný ústav
 org. syntesy, Pardubice-Rybitví, Czech.). Chem. listy 51,
 984-6 (1957); cf. C.A. 51, 3556g. Chlorination of carba-
 zole (I) gave 3,6-dichlorocarbazole (II) whose nitration
 yielded 3,6-dichloro-1,8-dinitrocarbazole (III). Hydrogena-
 tion of III in dil. soln. with H over Raney Ni gave 3,6-di-
 chloro-1,8-aminocarbazole (IV), whereas in concd. soln.,
 3,3',6,6'-tetrachloro-8,8'-dinitro-1,1'-azocarbazole (V) was
 formed. Treating 400 g. 97% I in 4 l. C₂HCl₃ with 350 g.
 Cl₂ at 10° 3 hrs., heating the mixt. toward the end of the
 reaction to 60°, cooling again to 10°, and passing in an
 addnl. 40 g. Cl₂, filtering the mixt. with suction, and wash-
 ing the crystals with 300 ml. C₂HCl₃ yielded 66.4% II, m.
 198°. Further chlorination of the mother liquors gave
 11.9% 1,3,6,8-tetrachlorocarbazole. Stirring 141.6 g. II
 with 450 g. AcOH and 360 ml. Ac₂O, treating the mixt. with
 72 ml. 68.7% HNO₃ during 30 min., 1st at 1-7°, later on at
 60°, rising the temp. to 75° and finally to 110° 10 min.,
 filtering the hot mixt., and washing the crystals with 120
 ml. boiling AcOH gave 84% III. Hydrogenation of 10 g.
 III in 300 ml. 94% EtOH over 1 g. Raney Ni at 60 atm.
 initial pressure at 97°, filtering the mixt. at 50°, and pptg.
 with H₂O gave 92% IV, decomp. 205° (from 93% EtOH),
 R_f 0.9 (Whatman 4, 2:1 15% NH₄OH-C₂H₅N). Treating
 50 g. III in 300 ml. 94% EtOH with H and 1 g. Raney Ni
 at 80°, filtering at 50°, boiling the ppt. with EtOH, digesting
 twice with hot PhNO₂, and crystg. from PhNO₂ gave V
 (ao. m.p.).

M. Hudlický

M. Hudlický

CZECHOSLOVAKIA/Organic Chemistry. Synthetic Organic Chemistry G-2

Abs Jour: Ref Zhur-Khim , No 24, 1958, 81658.

Author : Muzik F , Allan Z , Poskocil J
Inst :

Title : The Derivatives of Carbazole. IV. The Preparation
of 3,6-Dichloro-1,8-Diaminocarbazole

Orig Pub: Collect czechosl. chem commun., 1958, 23, No 4 770-772.

Abstract: See R. Zh. Khim., 1958, 36205

Card : 1/1

MUZIK, FERDINAND

Distr: hE2c(j)

Aromatic diazo- and azo compounds. XXVII. Coupling of resorcinol and *m*-phenylenediamine derivatives. Quinoid fixation of double bonds in the aromatic system. Zdeněk J. Allan and Ferdinand Muzik (Výzkumný ústav org. syntézy, Pardubice-Rybníček, Czech.). *Chem. listy* 52, 474-85 (1958); cf. C.A. 52, 10983i. Coupling of PhN_2Cl (I) with 4-nitroresorcinol (II), 4-nitrosorresorcinol (III), 4-nitro-1,3-phenylenediamine (IV), 1,3-phenylenediamine-4-sulfonic acid (V) and some of its derivs. gives under various conditions 2- or 6-azo compounds. Coupling of some sulfonated derivs. of $m\text{-C}_6\text{H}_4(\text{NH}_2)_2$ led to the replacement of the sulfo group. Coupling I with the following compds. gave the following ratios of 2-azo to 6-azo deriv.: $m\text{-C}_6\text{H}_4(\text{OH})_2$ < 0.03; II, approx. 15; III $\rightarrow \infty$; 4-benzeneazoresorcinol (VI), neutral medium, ∞ ; VI, strongly alk. medium, < 0.03; $m\text{-C}_6\text{H}_4(\text{NH}_2)_2$ (VII), < 0.03; 1,3,4- $\text{C}_6\text{H}_3(\text{NH}_2)_3\text{Me}$ (VIII) < 0.3; 1,3,4- $\text{C}_6\text{H}_3(\text{NH}_2)_3\text{NO}_2$, ∞ ; 4-benzenesulfonamido-1,3-phenylenediamine, < 0.03; 1,3,4- $\text{C}_6\text{H}_3(\text{NH}_2)_3\text{SO}_3\text{H}$, < 0.03. Coupling I with II in NaOH or NaHCO_3 and chromatographing the formed azo dye by descending method on Whatman No. 1 paper in 23% NH_3 gave 2,6-bis(phenylazo)-4-nitrosorresorcinol, R_f 0.30 2-phenylazo-4-nitrosorresorcinol R_f 0.63, and 6-phenylazo-4-nitrosorresorcinol, m. 165°, R_f 0.66. I and III in an acetate medium gave 2-phenylazo-4-nitrosorresorcinol, R_f 0.70. I and IV yielded 2-phenylazo-4-nitro-1,3-phenylenediamine (VII), m. 103.5°. Refluxing VII 2 hrs. with 50% aq. NaOH and with 30% Na 1,3-xylene sulfonate gave 2-phenylazo-4-nitro-3-aminophenol, R_f 0.43, and 2-phenylazo-4-nitrosorresorcinol, R_f 0.54. Sulfonation of VII gave V and 1,3-phenylenediamine-4,6-disulfonic acid. Heating 2.44 g. VIII and 2 g. 98% H_2SO_4 4 hrs. at 135° at 9-10 mm. and 1 hr. at 180°, and boiling the product with a small amt. H_2O gave 2,4-diaminotoluene-5-sulfonic acid (IX). Sulfonation of VIII with 63% oleum at 100-5° gave IX and 2,4-

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diaminotoluene-3,5-disulfonic acid (X). Heating 1.5 g. 2,6-(NH_2) $_2\text{C}_6\text{H}_3\text{Me}$ with 1.23 g. 98% H_2SO_4 1.5 hrs. at 140° at 6 mm. and 1 hr. at 180-210° gave 2,6-diaminotoluene-3-sulfonic acid (XI). Coupling I with V gave 6-phenylazo-1,3-phenylenediamine-4-sulfonic acid (R_f 0.54), and a small amt. of 2,6-bis(phenylazo)-1,3-phenylenediamine-4-sulfonic acid (R_f 0.05). IX with diazotize 1 $p\text{-N}_2^+\text{C}_6\text{H}_4\text{SO}_3^-$ (XII) (2 equiv.) gave 3,5-bis(phenylazo)-2,4-diaminotoluene-4',4'-disulfonic acid, R_f 0.09. Coupling X and I gave 5-phenylazo-2,4-diaminotoluene-3-sulfonic acid. Coupling XII with XI gave a 5-azo compd., with 2 6-diaminotoluene-4-sulfonic acid a 3-azo compd., and with 2 4-diaminotoluene-6-sulfonic acid a bis-azo compd. XXVIII. Coupling with N,N' -bis(phenylsulfonyl)-*m*-phenylenediamine. Disemiquinones, a novel type of compounds. Ferdinand Muzik and Zdeněk J. Allan. *Ibid.* 480-83. Coupling of 1,3-(PhSO_2NH_2) $_2\text{C}_6\text{H}_3$ (I) and of 1,3-($p\text{-MeC}_6\text{H}_4\text{SO}_2$) $_2\text{C}_6\text{H}_3$ (II) with PhN_2Cl (III) gave 1,3,4,6-(PhSO_2NH_2) $_4\text{C}_6\text{H}_2$ (IV) and 1,3,4,6-($p\text{-MeC}_6\text{H}_4\text{SO}_2$) $_4\text{C}_6\text{H}_2$ (V), resp.; coupling of II with $p\text{-O}_2\text{SC}_6\text{H}_4\text{N}_2$ (VI) gave 1,3,4,6-($p\text{-MeC}_6\text{H}_4\text{SO}_2$) $_4\text{C}_6\text{H}_2$ (V I). Reductive cleavage of IV led to 1,3,4,6-(NH_2) $_4$ (PhSO_2) $_2\text{C}_6\text{H}_2$ (VIII) which was transformed to lin-bis(triazolobenzene) (IX) by the action of HNO_3 followed by hydrolysis. Oxidation of IX gave X. Oxidation of V and VII gave XI. X = H and XI (X = SO_2H) (XII), resp., whose reduction yielded compds. XIII (X = H) and XIII (X = SO_2H) (XIV) resp. Alkalizing a soln. of 18.11 g. $m\text{-C}_6\text{H}_4(\text{NH}_2)_2$ 2HCl in 100 ml. H_2O with Na_2CO_3 stirring, and adding at 60-75° 18.9 g. PhSO_2Cl and 60 ml. 23% Na_2CO_3 gave 38.6-39.1 g., m. 169.5° (EtOH). Simultaneously was prepd. II, m. 172° (Et OH). Dissolving 20.83 g. II

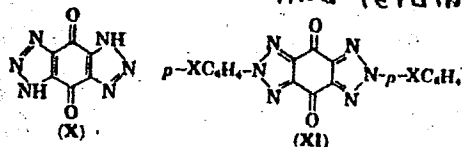
Zdeněk J. ALLAN AND Ferdinand Mužík

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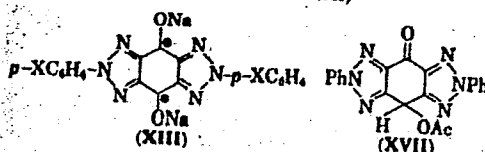
at 60° in 100 ml. H₂O and 44 ml. 2.5N NaOH, adding 50 ml. 10% NaCl, filtering off the crystals at 25°, and washing them with 10% NaCl and a mixt. of petr. ether-EtOH 1:1 yielded 23.8 g. di-Na salt of II (IIa) of 83.3% purity. Treating 3.89 g. I in 20 ml. N NaOH, adding 20 ml. 2.5N Na₂CO₃ and 55 ml. C₆H₅N, and at 0-5° 0.022 mole of III in 32 ml., dilg. the suspension after 1 hr. with 50 ml. H₂O, and washing the filtered product with EtOH and H₂O gave 5.5 g. crude IV. Pptn. of 0.9 g. crude IV in 20 ml. C₆H₅N with an equal vol. hot EtOH gave 0.75 g. pure IV, m. 264-6° (decompn.). Coupling a soln. of 5.55 g. IIa in 35 ml. H₂O, 55 ml. C₆H₅N, and 20 ml. 2.5N Na₂CO₃ with 0.022 mole III in 45 ml., filtering the dye after 30 min., and washing it with 25% C₆H₅N, EtOH and H₂O gave 5.9 g. crude V which was purified by dissolving 5 g. in 30 ml. C₆H₅N and pptg. with 9 ml. H₂O at 40°, m.p. 241-4° (PhMe-EtOH 1:1). Treating a soln. of 5.55 g. IIa in 100 ml. H₂O with a neutral suspension of 0.021 mole VI at 5°, neutralizing the mixt. with Na₂CO₃ to Congo red, adding 8 ml. 2.5N Na₂CO₃ and after 45 min. 4 ml. 5N AcOH, heating the mixt. slowly to 80°, filtering off the yellow-orange crystals at 50°, and washing them with 10% aq. NaCl gave 5.3 g. crude Na salt of VII (VIIa). Dissolving VIIa in 50% EtOH and treating the soln. with an ac. soln. of BaCl₂ gave the Ba salt of VII. Dissolving VIIa in concd. H₂SO₄ and pouring the soln. over ice after 10 min. gave VII. Coupling 2.15 g. 1,2,4-MeC₆H₃(NHSO₂CH₃)₂ with 0.015 mole VI gave after acidifying with H₂SO₄ 5-phenylazo-2,4-diaminotoluene-6-sulfonic acid (R_f 0.54 in 23% NH₃). Treating 1.5 g. IV in 94% EtOH with a few drops 2.5N NaOH and an excess of Na₂S₂O₄ at 80-90°, reducing the aldehydic with AcOH to the Brilliant Yellow point, filtering off the crystals, washing them with H₂O, and recrystg. from 94% EtOH gave VIII, m. 220-31° (partly decomp.). Treating 1 g. VIII dissolved in 94% EtOH and 1/3 a few drops of 63% H₂SO₄ with a few drops of 2.5N NaNO₂,

filtering off the crystals after 15 min., and washing them with EtOH gave 0.9 g. *lin-bis (1-phenylsulfonyltriazolo)benzene* (XV), m. 199-201° (PhCl EtOH). Refluxing 0.85 g. (XV) in 10 ml. 94% EtOH with 10 ml. 2.5N NaOH 3-5 min. until a clear soln. was formed, filtering the soln. with activated C, acidifying the filtrate with AcOH, evapg. to a small vol. and filtering gave 0.1 g. IX, brownish needles, m. 315° (decompn.), dissolving in dil. NaOH to a soln. having bluish red fluorescence, forming HCl, H₂SO₄, and HNO₃ salts by dissolving in warm 30% acids and cooling. The same compd. was obtained by acidic hydrolysis of XV and from the analogous tosyl deriva. Stirring 0.58 g. IX with 10 ml. H₂O, adding 2 ml. 2.5N NaOH, acidifying the mixt. of the Na salt of IX with 10 ml. 63% H₂SO₄, adding to the boiling soln. all at once 3.5 g. K₂Cr₂O₇ in 10 ml. H₂O, filtering off the yellow plates, and washing them with H₂O gave 0.62 g. X, R_f 0.43 in 23% NH₃ (after repptn. with HCl from an alk. soln.). X was also obtained by oxidation with PbO₂ in dil. H₂SO₄ or HNO₃. Reduction of X with Na₂S₂O₄ NaOH in a dil. soln. gave *bis(triazolo)-hydroquinone* (XVI), yellow plates. Refluxing 1.5 g. V with 3 g. Na₂Cr₂O₇ in 150 ml. 98% AcOH while adding 1.5 ml. 63% H₂SO₄, dilg. the mixt. with 100 ml. H₂O, filtering while hot, and washing the crystals with AcOH gave 0.6 g. XI, subliming above 350° (PhNO₂), and, from the filtrate, 0.15 g. XVI, m. 218° (partly), then solidifying. Soln. of XVI in dioxane or C₆H₅N and dil. NaOH is reduced to XIII by H₂S₂O₄. Treating 5 g. VII in 100 ml. H₂O at 90-5° with 5 g. K₂Cr₂O₇ in 15 ml. H₂O, treating the boiling soln. with 30 ml. 63% H₂SO₄, refluxing

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the formed suspension until dissolved, cooling, filtering off the crystals and washing them with 30% H₂SO₄ gave XII;
3/3 Ba salt, colorless needles. Reduction of XII with Na₂S₂O₄ gave XIV. M. Hudlíček

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Country : CZECHOSLOVAKIA G
Category : Organic Chemistry. Synthetic Organic Chemistry
Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15346
Author : Muzik, P.; Allan, Z. J.
Institut. :
Title : Aromatic Diazo and Azo Compounds. XXVIII. Combination with N,N'-bis-Benzenesulfonyl-m-phenylenediamine. A New Type of Substances - Di-
Orig Pub. : Chem. listy, 1958, 52, No 3, 486-493
Abstract : By the interaction of m-phenylenediamine hydrochloride (I) with benzenesulfochloride in an aqueous medium at 60-75° in the presence of Na₂CO₃, N,N'-bis-benzenesulfonyl-m-phenylenediamine (II) was synthesized with a 100% yield, and m.p. of 199.5° (from alcohol). By an analogous method, from I and p-toluenesulfochloride, N,N'-bis-p-toluenesulfonyl-m-phenylene-
* semiquinones
Card: 1/9

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Country :
Category : G
Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15346
Author :
Institut. :
Title :
Orig Pub. :
Abstract : ride (IV), and by the addition of 50 ml. of
cont'd. water, 5.5 g. of 4,6-bis-benzeneazo-1,3-bis-
benzenesulfonylaminobenzene (V) was synthesized,
m.p. 264-266° (from chlorobenzene). Analogously,
by combination of 0.01 mole of the di-Na salt
of III with 0.022 mole of IV, 4,6-bis-benzene-
azo-1,3-bis-p-toluenesulfonylaminobenzene (VI),
yield 5.9 g., m.p. 241-244°, was obtained [from
toluene-alcohol (1:1)]. By combination of 0.01
mole of Na salt of III with 0.021 mole of a
Card: 3/9

Country	:	G
Category	:	
Abs. Jour	:	Ref Zhur - Khim., No 5, 1959, No. 15346
Author	:	
Institut.	:	
Title	:	
Orig. Pub.	:	
Abstract cont'd.	:	4'-sulfo-acid was synthesized. By reduction of V in an alcohol solution by means of an excess of $\text{Na}_2\text{S}_2\text{O}_4$ in the presence of aqueous NaOH ($80-90^\circ$), 1,5-bis-benzenesulfonylamino-2,4-diaminobenzene, m.p. $229-231^\circ$ (with decomposition; from alcohol), is formed; the latter is condensed with HNO_2 in an alkali medium, and forms lin-bis-(1-benzenesulfonyltriazolo)-benzene (IX), with a high yield, m.p. $199-201^\circ$ (from chlorobenzene-alcohol). By brief boiling
Card:	:	5/9

Country :
Category : G

Abstr. Jour : Ref Zhur - Khim., No 5, 1959, No. 15346

Author :
Institut. :
Title :

Orig. Pub. :

Abstract : of 0.85 g. of IX in 10 ml. of alcohol with 10
cont'd. ml. of 2.5 n. NaOH with subsequent acidifica-
tion of CH_3COOH and evaporation, 0.15 g. of
lin-bis-triazolobenzene (X) was obtained, which
melts with decomposition at 315° in the capil-
lary, and at 350° in a Kofler block (crystal-
lized from water). X is also formed from IX by
hydrolysis with H_2SO_4 . By oxidation of 0.58 g.
of X in diluted H_2SO_4 by boiling with 3.5 g. of
 $\text{K}_2\text{Cr}_2\text{O}_7$ in 10 ml. of water, 0.62 g. of bis-tri-

Card: 6/9

Card: 7/9 S_2O_4 in diluted solution of NaOH with
subsequent acidification

Country	:	
Category	:	G
Abstr. Jour	:	Ref Zhur - Khim., No 5, 1959, No. 15346
Author	:	
Institut.	:	
Title	:	
Orig. Pub.	:	
Abstract cont'd.	:	: at 218°, then hardens and does not melt below 340°, being apparently [2,3:5,6]-bis-(2-phenyl-triazolo)-acetoxycyclohexanol-4-one, which is probably transformed into XII with increased temperature. Analogously to XII, by oxidation of VIII in water or in CH₃COOH, bis-(2-phenyl-triazolo)-p-benzoquinone-4',4"-disulfo-acid (XIII) is formed; its Ba salt was obtained. During the reduction of XII and XIII with Na₂S₂O₄ in diluted NaOH, the solution acquires a
Card:	:	8/9

G - 26

CZECHOSLOVAKIA / Organic Chemistry. Organic Synthesis. G-2

Abs Jour: Ref Zhur-Khimiya, No 10, 1959, 14845.

Author : Chmatal V., Allan Z., Muzik, F.

Inst : Not given.

Title : Aromatic Diazo- and Azo-Compounds. XII. Synthesis of Tritriazobenzene and of Its Derivatives.

Orig Pub: Chem. listy, 1958, 52, No 5, 949-956.

Abstract: 2 gr of 1,3,5-trinitrobenzene (I) in 100 ml of ethylacetate are added to a cold solution containing 40 gr $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ in 50 ml of 36% HCl. The yield of 1,2,3-triaminobenzene chloride (II) is 2.1 gr. In the reduction of I with iron in HCl acid, II contains impurities of 10% 3,5-diaminophenol. By means of azo-synthesis of 6.92 gr diazotized sulfonic acid with 2.33 gr II, 3.2 gr of tris-azodye $\text{C}_{24}\text{H}_{21}\text{N}_3\text{O}_9$ (brown needles)

Card 1/8

G-10

... ..

Abs Jour: Ref Zhur-Khimiya, No 10, 1959, 34045.

Abstract: is produced. Oxidation of 20 gr of the latter in 150 ml water and 50 ml of 23% NH_4OH by means of 50 gr $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (boiling for 1 hour, treating with NaCl solution, and HCl acid, boiling of the residue with 0.4 gr $\text{Na}_2\text{S}_2\text{O}_4$ in NaOH solution, and precipitation from the filtrate with HCl acid and NaCl) 16 gr of the Na-dihydrate salt of 2,5,8-triphenyl tritriazobenzene-tris-4'-sulfonic acid (white needles crystallized from water) is synthesized. The azo-reaction of the diazotized 6-aminisidine (6.15 gr in 100 ml) and 2.33 gr II with the addition of acetone and of 2n. CH_3COONa yields 4.8 gr of the $\text{C}_{27}\text{H}_{27}\text{O}_3\text{N}_9$ dye, of which in pyridine (boiling for 1.5 hours with 10 gr. of

Card 2/8

Journal of Organic Chemistry. Organic Synthesis. 342
 Abs Jour: Ref Zhur-Khimiy, No 10, 1959, 34845.

Abstract: crystalline CuSO_4 yielded 1.8 gr of 2570 melt-
 ing point (from a mixture of $\text{C}_6\text{H}_5\text{Cl}-\text{C}_6\text{H}_5\text{FO}_2$,
 4:1) of 2,5,8-tris- (o-methoxyphenyl)-triazazo-
 benzene of violet color. Analogically from
 n-anisidine and II was synthesized 2,5,8-tris-
 (n-methoxyphenyl)-triazazobenzene of 3290 melt-
 ing point, pink needles. A 9 gr sample of dia-
 zotized 4-HOCCOMH-3- $\text{H}_3\text{C}_3\text{C}_6\text{H}_3\text{H}_2$ is mixed with
 2.3 gr solution of II followed by the precipita-
 tion of tris-azodye $\text{C}_{30}\text{H}_{24}\text{O}_{18}\text{N}_{12}$ (III) with
 2.5 n Na_2CO_3 with yield of 90%. 5 gr of azodye
 is oxidized with ammoniacal solution of CuSO_4
 with the addition of 2.5n HCl (boiled for 30
 minutes), after acidifying of the residue, mix-

Card 3/8

(6 - 11)

CZECHOSLOVAKIA / Organic Chemistry. Organic synthesis. G-2

Abs Jour: Ref Zhur-Khimiya, No 10, 1959, 34845.

Abstract: ture is boiled with 2.5 n KOH for 30 minutes. The obtained 2,3,8-tris-(4'-aminophenyl)-triazolobenzene-tris-3'-sodium sulfonate (semi-hydrate) (IV) yields 5 gr of yellowish needles (from 28% alcohol). Azo-combination of IV with 2-acetyl amino-5-naphthol-7-sulfonic acid or with 1-amino-8-naphthol-3,6-disulfonic acid results in the formation of red or violet dyes for the direct application of cotton. They are stable to moisture, but are not stable to light. From 2.5 gr of the diazotized 5-aminotetrazol by azo-combination of II in water-acetone solution is obtained tris-azodye, which in the oxidation at 70° in an alkaline medium with the aid of NaOCl and after cooling yields 0.8 gr of a Na-salt of 2,3,8,-tris-5'-tetrazolyltriazolobenzene.

Card 4/8

CZECHOSLOVAKIA / Organic Chemistry. Organic Synthesis. G-2

Abs Jour: Ref Zhur-Khimiya, No 10, 1959, 348-5.

Abstract: After the acidification in hot 44% alcohol free acid and white crystals that decompose above 250-300° are formed. In the oxidation of 50 gr III with 150 gr KMnO_4 in alkaline solution (4 hrs, formerly at 0-5° and then at 100°), tritriazolo-benzene-2,5,8-tricarboxic acid is formed with 81% yield of crystals (from water). Upon heating these crystals decompose violently. 2 gr of acid are fused with 6 gr NaOH at 350-360° for 4 hours, followed by dissolving in water, acidification and obtainment of 0.9 gr of tritriazolobenzene monohydrate, which is then being purified by reprecipitation with HCl or CH_3COOH from NH_4OH solution. The ammoniacal salt ($\text{C}_6\text{H}_3\text{N}_9 \cdot 3\text{H}_3$) when heated to 300° and higher, explodes. From II

Card 5/8

6-12

CZECHOSLOVAKIA / Organic Chemistry. Organic Synthesis. C-2

Abs Jour: Ref Zhur-Khimiya, No 10, 1959, 34845.

Abstract: and $n\text{-CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$ in pyridine, 1,3,5-tritoylaminobenzene (V) is obtained with the yield of 71% of 271 melting point (from $\text{C}_6\text{H}_5\text{Cl}$) material, and from 2,4,6-triaminotoluene is obtained 2,4,6-tritoylaminotoluene of 130° melting point (from alc.). By azo-combination of V solution in pyridine with $\text{C}_6\text{H}_5\text{N}_2\text{Cl}$ at the addition of Na_2CO_3 solution, 2,4-bis-benzeneazo-1,3,5-tritoylaminobenzene with 88% yield and of 143° melting point (from $\text{C}_6\text{H}_5\text{Cl}$) is obtained. After reduction in an alkaline-water alcohol solution with $\text{Na}_2\text{S}_2\text{O}_4$ at 70-80° it transforms into $\text{N}^1, \text{N}^3, \text{N}^5$ -tritoylpentaminobenzene (VII), with the yield of 50% and 239-239° melting point (from alc. water).

Card 6/8

Distr: 4E2c(j)

Aromatic diazo and azo compounds, XXXI. Decomposition of diazo compounds derived from azo dyes possessing Cleave acid as the end member. Karel Štátník, Ferdinand Mulík, Zdeněk J. Allan, and Jaroslav Poškoš (Vyzk. ústav org. synth., Pardubice-Rybitví, Czechoslov.). *Chem. Brown RL (C I B A)* (cf. C.A. 49, 16438i); prep. (cf. C.A. 49, 7858k) from tetrazotized benzidine (I), salicylic acid (II), Cleave acid (III), diazotization, and 8-quinolinol (IV) (1/2 as much as the other compds.), was shown by paper chromatography on Whatman No. 1 and elution with: 15% aq. NH₃, pyridine, and iso-AmOH mixt. (in vol. ratio 1:1:1); 0.4, 40% of the expected trisazo dye, violet spot, *R_f* 0.4; 40% of the 4,4'-[p-(3,4-HO₂C(HO)C₆H₃N₂N)]-C₆H₃(C₆H₃N₂N)] deriv. of 1,1'-binaphthyl-6,6'-disulfonic acid (V); yellowish brown spot, *R_f* 0.2; 10% of the disazo dye from 1 mole tetrazotized I and 2 moles II, yellow spot, *R_f* 0.7; and 5% of the disazo dye from 1 mole tetrazotized I, 1 mole II, and 1 mole III (the NH₂ group of the latter is converted to OH), red spot, *R_f* 0.6. A weakly acid (to Congo) (SO₃H) was added at 5-10° to a weakly alk. (to Brilliant Yellow) soln. of 0.1 mole diazotized 1,2,5-H₃NC₆H₃-Na₂CO₃. Filtering off (after 2 hrs.) the pptd. azo dye, dissolving the paste (87 g.) in 300 ml. H₂O and 40 ml. 2.5N NaOH, filtering the soln., treating with 40 ml. 2.5N NaNO₂, pouring the mixt. into 160 ml. 2.5N HCl and excess ice, adding (after 15 min.) NaCl, filtering off, and washing with 10% aq. NaCl gave prisms of the diazo compd. RN₂Cl, *R* = 4-[2,5-(NaO₂S)₂C₆H₃N=N]-6-(NaO₂S)C₆H₃ through out this abstr. The mixt. of 12.5 g. wet RN₂Cl in 50 ml. ice

and H₂O decomd. by addn. of 20 ml. 2.5N Na₂CO₃ at 0°, 15°, and 100°, resp., yielded (as shown by paper chromatography on Whatman No. 1 and elution with 1N HCl) 65, 65, 85% RR (*R_f* 1.0); 15, 10, 5% R₁NH (*R_f* 0.8); 15, 10, 7% RNH₂ (*R_f* 0.8); <1, <1, <1% ROH (*R_f* 0.4); 4, 4, 1% unidentified compd. (*R_f* 0.3); and 0, 10, 0% trisazo dye, the 4-[2,5-(NaO₂S)₂C₆H₃N=N]-2-[RN=N]-deriv. of 1,6-HOC₆H₃SO₃Na (VI) (*R_f* 0.1). Authentic samples of ROH and VI were prep. by conventional methods. RR was isolated presumably in the form of C₂₀H₁₀O₁₀Na₄Bas₄·12H₂O. An aq. soln. of RR was acidified with aq. HCl, reduced at the boil with SnCl₂, and chromatographed on paper in 1N HCl. Spots were detected by diazotization in an atm. of nitrous fumes and by spray with a soln. of 2,3,6-HOC₆H₃(SO₃Na)₃ and Na₂CO₃; the orange spot (*R_f* 0.96) was identified as 1,2,5-H₃NC₆H₃(SO₃Na)₃ (comparison with an authentic specimen); the next violet spot is presumably due to the 4,4'-diamino-1,1'-binaphthyl-6,6'-disulfonic acid (VII). Instead of authentic VII the 4,4'-diamino-1,1'-binaphthyl-7,7'-disulfonic acid (VIII) was prep. (by the method of Bogoslovskii, cf. C.A. 41, 104i) which gave spot of the same *R_f* (0.87) and of similar color reactions as VII. Aq. soln. of 11.15 g. III and 20 ml. 2.5N Na₂CO₃ was dild. to 500 ml. with H₂O; adding 20 ml. 2.5N NaNO₂, pouring the mixt. into 100 ml. 2.5N HCl and ice, pouring the suspension formed with vigorous stirring into a mixt. prep. from 12.5 g. cryst. CuSO₄ in 50 ml. H₂O, 20 ml. 23% aq. NH₃, and an aq. soln. of 3.5 g. NH₄OH·HCl, pptg. the product with NaCl, filtering off, dissolving the ppt. in a large vol. of very dil. NaOH, treating the soln. with C, cooling, filtering off the orange glistening plates of the azo compd. (3.4 g.), dissolving in aq. HCl, and reducing with SnCl₂ gave sparingly sol., hairlike needles of VIII.

Jih Piont

COUNTRY : Czechoslovakia
 CATEGORY : G-2
 ASS. JOUR. : RZKhim., No. 1959, No. 1957
 AUTHOR : Murka, P.; Allan, Z. J.
 INST. :
 TITLE : Aromatic Diene- and Azo-Compounds. XXVIII.
 Synthesis of N,N'-Bis-Benzalphenyl-1,4-diazo-
 benzidine. A New Type of Substance -- The
 ORIG. PUB. : Czechosl. Chem. Commun., 1959, 24,
 No. 1, 474-483
 ABSTRACT : See RZKhim., 1959, No. 5, 1534.

CARD:

• Disenquinones.

141

PANCHARTEK, J.; ALLAN, Z.J.; MUZIK, F.

Aromatic azo and diazo compounds. XXXIX. Chromatographic constitutional analysis of synthetic dyes. Coll Cz Chem 25 no.11:2783-2799 N '60.

(EEAI 10:6)

1. Organisch-technologisches Laboratorium I, Forschungsinstitut für organische Synthesen, Pardubice-Rybitvi.

(Azo compounds) (Diazo compounds) (Chromatography)
(Dyes and dyeing)

MUZIK, F.

Aromatic azo- and diazo compounds. XL. Closing the oxazine ring in amino-peri-benzamino-naphthol sulfonic acids; preparation of some peri-naphthoxazine derivatives. Coll Cz Chem 25 no.11:2831-2840 N '60.
(EEAI 10:6)

1. Organisch-technologisches Laboratorium I., Forschungsinstitut für organische Synthesen, Pardubice-Rybitvi.

(Azo compounds)	(Diazo compounds)	(Amino group)
(Oxazine)	(Naphthoxazine)	(Naphtholsulfonic acid)
	(Ring closure)	

VESELY, M.; MUZIK, F.; POSKOCIL, J.

Aromatic diazo and azo compounds. Part 44: Metallic formazan dyes produced from acetoacetic acid methyl ester and formation of azo dyes from triazole group. Coll Cz Chem 26 no.10:2530-2541 0 '61.

1. Organisch-technologisches Laboratorium I, Forschungsinstitut für organische Synthesen, Pardubice-Rybitvi.

MUZIK, F.; DOBROVOLNY, J.; VESELY, M.

Structural analysis of some types of azo dyes. Chem pruz 15 no.3:
151-155 Mr '65.

1. Research Institute of Organic Syntheses, Pardubice-Rybitvi.

MUZIK, F.

Isomerization and cyclization of amino-peri-acylaminonaphthol-sulfonic acids into 9-amino- α -naphthoxazolium derivatives.
Coll Cz Chem 30 no.2:559-572 F '65.

1. Forschungsinstitut für organische Synthesen, Pardubice-Rybitvi. Submitted August 19, 1963.

MUZIK, Josef, Dr.

TEYSCHL, Otokar, Prof. Dr; MUZIK, Josef, Dr

Wanted and unwanted children. Neur. & psychiat. case. 17 no.3:
186-190 Je '54.

(CHILD,

*wanted & unwanted)

MUZIK, Josef

Passenger and motor vehicles. Siln doprava 12 9:12-13 S
'64.

1. Public Safety Agency, Ostrava.

MUZIK, M.

Uniform illumination of enlarging apparatus. Jeana mech
opt 9 no. 1:26-28 Ja '64.

1. Ustav pro vyzkum optiky a jemne mechaniky, 'rerev.

MUZYK, M.

Anamorphote systems for picture taking and projecting. Jemna
mech opt 8 no. 8:252-253 Ag '63

MUZIK, R.; CHMELAR, V.; KALCHER, J.

Objective evaluation of the quality of malt for alcohol distilleries. p. 11

KVASNY PRUMSYL. (Ministerstvo potravinarskeho prumyslu) Praha, Czechoslovakia
Vol. 5, No. 4, Apr. 1959

Monthly List of East European Accessions (TEAI), LV, Vol. 6, No. 7, July 1959
Encl.

Z/032/60/010/05/028/036
E073/E515

AUTHOR: Mužik, V.

TITLE: Remote Measurement in Heavy Machine Tools

PERIODICAL: Strojírenství, 1960, Vol 10, Nr 5, pp 391-392

ABSTRACT: In heavy machine tools the possibility of remote measurement of the position of the tool and the process of its movement has to be provided so as to enable centralized control of the machine tool by the operator. To permit reading off the position data from various operator locations, television apparatus is being used by some firms. In the Skoda Works V-500 type, 110 V, 500 c.p.s., selsyns are used for this purpose. By means of these selsyns the position of the instrument is transmitted to the operating points. Fig 3 gives a plot of the torque as a function of the difference between the relative positions of the transmitting and receiving selsyns; it was found that 50 c.p.s. selsyns did not have the required torque nor sensitivity.

Card 1/2

Fig 4 shows a photo of the panel which contains the

Z/032/60/010/05/028/036
E073/E535

Remote Measurement in Heavy Machine Tools

pointers which are actuated by the receiving selsyns.
The accuracy is high enough to evaluate circumferential
distances of 0.025 mm.
There are 4 figures.



ASSOCIATION: Závody V. I. Lenina, Plzeň (V. I. Lenin Works, Pilsen)

Card 2/2

MUZYK, Vladislav, inz.

Shortcomings of power engineering in the construction of
new plants. Energetika Cz 14 no. 3: 123-126 Mr '64.

1. Chief power engineer, Zelezne doly a hrudkovny,
National Enterprise, Ejpovice.

MUZYK, Vladislav, inz.

Shortcomings in power engineering in building new enterprises. Energetika Cz 14 no. 4: 187-189 Ap '64.

1. Chief power engineer, Zelezne doly a hrudkovny National Enterprise, Ejovice.

KUZIK, Vladislav, inz.

Failures of the power engineering in building a new industrial enterprise. Energetika 1974 no.5:226-227. My. 1974.

L. Chief power engineer, Zelezne dolya i Zhukovskiy National Enterprise, Ukraine.

MUZIKAR, C.

CZECH

539.18

2753. A contribution to the theory of the decay of μ -mesons. C. MUZIKAR AND V. VOTRUBA. Czechoslovak J. Phys., 1, no. 2, 65-72 (1952).

Deals with the probability of the spontaneous decay of a μ -meson into one electron and one photon and also the probability of two-neutrino annihilation of the positive μ -meson with an electron in condensed matter. These probabilities are compared with the probability of the standard spontaneous decay of the μ -meson (into one electron and two neutrinos). Attention is called to the possibility of still other modes of μ -meson decay in matter.

A.

RMZ

MUZIKAR C.

Electromagnetic waves excited by an elementary electric dipole in a cylindrical waveguide. p.127
(Czechoslovak Journal Of Phusics, Vol. 1, no. 3/4, 1952) Czechoslovakia

SO: Monthly List of East European Accessions, Vol. 2, #8, Library of Congress,
August 1953, Incl.

MUZIAR, Cestmir.

A remark on the generalized electromagnetic field theory [in English].
Chekh.fiz.sbur. 3 no.3:256-257 S '53. (MLRA 7:6)

1. Institute of Theoretical Physics, Charles University, Prague.
(Electromagnetic theory)

S/058/62/000/004/052/'160
A058/A101

AUTHORS: Muzikář, C., Pafomov, V. E.

TITLE: On Vavilov-Cherenkov radiation in uniaxial crystals

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 1, abstract 4G3
("Chekhosl. fiz. zh.", 1961, B II, no. 10, 709-710)

TEXT: The authors examine the energy of Vavilov-Cherenkov radiation in uniaxial magnetic crystals and in uniaxial double-anisotropy crystals.

[Abstracter's note: Complete translation]

Card 1/1 .

MUZIKAR, C.

Muzikar, C. Cerenkov's radiation of the space charge in wave guides and in an unbound medium. p. 517. CESKOSLOVENSKY JASOENIS PRO FYZIKU. Praha. Vol. 4, no. 5, Oct. 1954.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 11, Nov. 1955, Uncl.

MUZIKAR, C.

21
✓ 1958. THE COVARIANT PHENOMENOLOGICAL QUANTUM
THEORY OF THE ELECTROMAGNETIC FIELD IN A DIELECTRIC.

C. MUZIKAR.

Czech. J. Phys., Vol. 6, No. 6, 499-500 (Oct., 1958). In German.

In an explicitly covariant formulation, the potential A_μ is expressed in the form $a_\mu + \phi u_\mu$, where the 4-vector u_μ defines the motion of the frame S relative to the dielectric rest-frame S^0 , and a_μ is orthogonal to u_μ . The gauge condition used reduces to $\text{div } \mathbf{A} = 0$ in S^0 . Two alternative definitions of the momentum 4-vector, involving 3-space integration in S and in S^0 respectively, are shown to be equivalent for divergence-free energy-momentum tensors, and momentum and energy eigenvalues are calculated in the cases of Minkowski, radiation and Abraham tensors. The relation of the theory to Schwinger's theory of vacuum fields is considered.

R.A. Newing

21
1-2WM

JR
MT

VOZIAN, G.

Covariant phenomenological quantum theory of the electromagnetic field in a dielectric substance. n. 499. (CESOSLOVENSKY CASOPIS PRO FYSIKU, Vol. 4, No. 5, Sept 1956, Praha, Czechoslovakia)

SD: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

Muzikar, C.

Theorie elektromagnetickeho pole (Theory of Electromagnetic Field)
a book review. P. 86

CASOPIS PRO PESTOVANI MATEMATIKY. (Ceskoslovenska akademie ved.
Matematicky ustav) Praha
Vol. 81, no. 1, Apr. 1956

Source: EEAL - LC Vol. 5. No. 10 Oct. 1956

MUZIKAR, C.

CZECHOSLOVAKIA/Theoretical Physics - Quantum Electrodynamics.

B

Abs Jour : Ref Zhur Fizika, No 1, 1960, 196

Author : Muzikar, Cestmir

Inst : Charles University, Prague, Czechoslovakia

Title : The Photon Spin in the Phenomenological Theory of the
Electromagnetic Field

Orig Pub : Chekosl. fiz. zh., 1958, 8, No 5, 501-509

Abstract : The author considers the propagation of an electroma-
gnetic wave in a moving dielectric using a method
previously developed by him (Referat Zhur Fizika, 1957,
No 9, 21815; No 10, 25673) and shows that at a non-
zero angle between the direction of motion of the die-
lectric and the direction of propagation of the elec-
tromagnetic wave the polarization vector of the subs-
tance is not perpendicular to the wave vector.

Card 1/2

- 6 -

AUTHOR: Muzikář, Čestmír CZ/37-58-5-1/19
TITLE: Photon Spin in the Phenomenological Theory of the
Electromagnetic Field (Spin fotonu ve fenomenologické
teorii elektromagnetického pole)
PERIODICAL: Československý Časopis pro Fysiku, 1958, Nr 5,
pp 513-520 (Czech)

ABSTRACT: In the phenomenological theory of the electromagnetic field the problem of selecting the correct tensor of the density of the impulse and energy is one which has hitherto not been satisfactorily solved. On the basis of the ponderomotoric effects of the field on the dielectric it is not possible to determine this problem experimentally, since the effect is too small to be measured. In an earlier paper (Ref 1) it was shown that the phenomenological quantum theory of an electromagnetic field in a dielectric can be evolved covariantly, taking into consideration the Lorentz transformation, provided that the static system of the dielectric (the field carrier) emerges as the distinctive system. By measuring the spin of the photons, for instance by a modification of the method, for which G. Toraldo di Francia (Ref 4) developed the theory for vacuum, it would be possible to

Card 1/2

MUZIKARZH, Ch

82606

S/056/60/033/01/21/329
B006/B063

247700

AUTHOR: Muzikarzh, Ch.

TITLE: The Vavilov-Cherenkov Effect in Uniaxial Crystals ²¹

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 39, No.1(7), pp. 163-170

TEXT: The theory of Cherenkov radiation in anisotropic media was developed by V. L. Ginzburg (Ref. 1), who, proceeding from the Maxwell equations, derived an expression for the angular distribution of radiant energy in transparent, non-magnetic crystals. Additional contributions to this theory were made by V. Ye. Pafomov (Ref. 4) who developed the theory of infinitely large uniaxial crystals, and by I. M. Frank who studied the conditions for the occurrence of Cherenkov radiation by using its interference properties. The article under abstraction deals with the Cherenkov radiation of an electric point charge moving uniformly in an arbitrary direction to the optical axis of a uniaxial transparent, non-gyrotropic crystal. The magnetic properties of this crystal are determined by the magnetic permeability, namely, the scalar μ , and its electrical

Card 1/3

82606

The Vavilov-Cherenkov Effect in Uniaxial Crystals S/056/60/039/01/21/029
B006/B063

properties depend on the dielectric constant, viz. the symmetric tensor ϵ_{ik} . The coordinate system relative to the crystal axis is laid in such a way that the components $\epsilon_{ii} \neq 0$. The point charge under consideration is assumed to move toward the unit vector $\vec{r}$ with the velocity $w = c\beta$. The optical axis is assumed to run in the x_1 -direction; $\epsilon_{11} = \tau$, $\epsilon_{22} = \epsilon_{33} = \epsilon$. On these assumptions the author studies the properties of the ordinary and extraordinary waves (which are indicated by the subscripts o and e). Expressions are derived for the density of radiation, the velocity of phase propagation, and the shape of the radiation cones. The energy of the extraordinary wave and the total radiation density are briefly studied in special sections. It was found that, in spite of the difficulties arising from the structure of the electromagnetic field in anisotropic media, the main properties of Cherenkov radiation in uniaxial crystals can be formulated in a simple way. This is particularly true of the very important formula for the total radiant energy: $S(\omega) = S_o(\omega) + S_e(\omega)$. If w is between the critical velocities, there are only waves

Card 2/3

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B006/B063

with one polarization. In this velocity range the optical axis is outside the cone, and thus $S(\omega) = e^2 \omega \mu c^{-2} (1 - \beta_o/\beta)$ or $S(\omega) = e^2 \omega \mu c^{-2} (1 - \beta_e/\beta) \beta_o/\beta$ (negative or positive crystal). This range is lacking in isotropic crystals. ✓
At velocities at which both ordinary and extraordinary waves occur, $S(\omega) = e^2 \omega \mu c^{-2} (1 - \beta_o \beta_e/\beta^2)$. Finally, the author thanks Professor I. M. Frank for his interest in this work and for his discussions. There are 3 figures and 6 references: 5 Soviet and 1 British.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy
(Joint Institute of Nuclear Research)

SUBMITTED: February 23, 1960

Card 3/3

MUZYKARZH, Ch., [Muzikar, C.]

Coherent phenomena due to radiation of identical oscillators,
of which a crystal is composed. Zhur.eksp.i teor.fiz. 41
no.4:1168-1174 0 '61. (MIRA 14:10)

1. Karlov Universitet v Prage, Chekhoslovakiya i Ob'yedinenny
institut yadernykh issledovaniy.
(Crystal lattices) (Electromagnetic theory)

z/0055/64/014/002/0089/0095

ACCESSION NR: AP4018173

AUTHOR: Muzikar, C.

TITLE: Time modulation of recoilless nuclear resonance fluorescence

SOURCE: Chekhol. fiz. zhurnal, v. 14, no. 2, 1964, 89-95

TOPIC TAGS: time modulation, recoilless nuclear resonance fluorescence, absorption of gamma-radiation, nuclear transition, mechanical filter, radiation scattering

ABSTRACT: The form of the line and the time dependence of processes of emission, scattering and absorption of gamma-radiation during nuclear transitions is usually distorted by the Doppler effect and the recoil of the nucleus. The author studied the time dependence of resonance fluorescence of nuclei excited by the spontaneous radiation of identical nuclei, paying particular attention to the influence of the periodic overlap of the source on the form of the scattered radiation line. He shows that the line may even split, and calculates the mechanical filter permitting measurement of pure radiation scattering. Original has 2 diagrams, 2 graphs and 21 numbered equations.

Card 1/2

ACCESSION NR: AP4018173

ASSOCIATION: Department of Mathematics and Physics, Karl University, Prague

SUBMITTED: 11Jul63

DATE ACQ: 18Mar64

ENCL: 00

SUB CODE: NS

NO REF SOV: 000

OTHER: 009

Card 2/2

Z/0055/64/014/004/0211/0226

ACCESSION NR: AP4035422

AUTHOR: Muzikar, C.

TITLE: Width and shift of the coherent spontaneous radiation line of a system of identical emitters

SOURCE: Chekhoslovatskiy fizicheskiy zhurnal, v. 14, no. 4, 1964, 211-226

TOPIC TAGS: crystal lattice, cubic lattice, electromagnetic interaction, identical oscillator, oscillator emission, spontaneous radiation, spontaneous emission, harmonic oscillator, line shift, line width, line broadening, emitter excitation, radiation shift

ABSTRACT: The influence of the retarded electromagnetic interaction of a system of identical oscillators arranged in a cubic lattice on the form of the line of spontaneous radiation is studied. All the cases of the mutual relation to the wave-length λ , the lattice constant a and the length of the crystal $L = Na$ are solved in a unified manner. In the long-wave case ($a < \lambda/2$) it is shown that the line is greatly broadened and shifted. In the micro-wave case ($a < L < \lambda/2$) the broadening is of the order of $N^2\gamma_e$ and the shift of the order $N^2(\lambda/a)\gamma_e$, where γ_e

ACCESSION NR: AP4033422

is the natural line width of an isolated emitter. In the optical case ($\alpha < \lambda/2 < L$) the broadening is of the order of $N(\lambda/\alpha)^2 \gamma_e$ and the shift of the order $(\lambda/c)^3 \gamma_e$. In the directions satisfying Bragg's condition the line loses its Lorentz form and further broadening as well as shifting of the line may occur. It is shown that the vibrations of the crystal lattice influence the coherent effects studied in the same way as they influence the Mossbauer effect. "The author thanks A. Hladik, CSc." Orig. art. has: 64 formulae and 3 figures.

ASSOCIATION: Faculty of Mathematics and Physics, Charles University, Prague

SUBMITTED: 19Sep63

DATE ACQ: 01May64

ENCL:00

SUB CODE: GE

NO REF SOV: 009

OTHER: 013

Card 2/2

L 22368-66 EWT(1)/EWT(m)/T DIAAP/IJP(c) GG

ACC NR: AP6009364

SOURCE CODE: CZ/0055/65/015/011/0771/0779

AUTHOR: Muzikar, C.

ORG: Faculty of Mathematics and Physics, Charles University, Prague

TITLE: Vavilov-Cherenkov radiation in dielectric and magnetic crystals

SOURCE: Chetkheslovatskiy fizicheskiy zhurnal, v. 15, no. 11, 1965, 771-779

TOPIC TAGS: magnetic crystal, dielectric crystal, crystal property, electron mobility, electron radiation, optic property, dielectric constant, anisotropic medium

ABSTRACT: The general theory of the Vavilov-Cherenkov radiation in dielectric crystals has been investigated. The velocity of polarization of waves plays an important role in the production of radiation. These properties of light, however, are specific also for the propagation of light in an anisotropic medium. It can be expected that Vavilov-Cherenkov radiation in an anisotropic medium will have special properties which are not found in an isotropic medium. Relationships were derived for the angular and spectral density of the radiation of electrons moving in crystals, the optical properties of which are described

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ACC NR: AP6009364

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by symmetrical tensors of the dielectric constant and permeability. The specific properties of Vavilov-Cherenkov radiation, especially the existence of two critical velocities, could also be used in the construction of Cherenkov counters of elementary particles. Orig. art. has: 36 formulas. [Based on author's abstract] [NT]

SUB CODE: 20/

SUBM DATE: 12Apr65/

ORIG REF: 003/

OTH REF: 005/ SOV REF: 017

Cord 2/2dda

HIRSCH, Gunther, inz.; BEIER, Gert, inz.; MUZIKA, Jaroslav[translator]

Standardization of the widths and diameters of machine tool
tables, T-slot distances and adaption of T-slot width.
Normalizace 11 no.7:207-213 JI '63.

1. Institut fur Werkzeugmaschinen, Karl-Marx-Stadt (for Hirsch
and Beier).

MUZIKAR, R.

Planning housing investments in continuous building. p.116 (Pozemni Stavby, Vol.3, no.3, Mar. 1957) Praha

SC: Monthly List of East European Accession (EEAL) IC, Vol.6, no.1, July 1957. Incl.

L 41245-66 EWP(j)/T IJP(c) RM/WW/DJ

ACC NR: AP6030510

SOURCE CODE: CZ/0032/66/016/003/0228/0233

AUTHOR: Muzikar, R. (Engineer); Vitak, V. (Engineer)

ORG: Antonin Zapotocky Military Academy, Brno (Vojenska akademie Antonina Zapotockeho)

TITLE: Plastics in anti-friction bearings

SOURCE: Strojirenstvi, v. 16, no. 3, 1966, 228-233

TOPIC TAGS: antifriction bearing, structural plastic

ABSTRACT: The article is a comprehensive survey analyzing the extent to which modern plastics are employed in antifriction bearings.] Plastics used in that branch of engineering are specified, as well as bearing elements made with them. Many examples from various industries demonstrate the advantages of plastics in some categories of bearings operating under unusual conditions. This paper was presented by Engineer M. Peterka. Orig. art. has: 15 figures and 2 tables. [Based on authors' Eng. abst.] [JPRS: 36,645]

SUB CODE: 13, 11 / SUBM DATE: none / ORIG REF: 007 / SOV REF: 004
OTH REF: 003

Card 1/1MLP

UDC: 621.822.6:679.5

09'8 1529

CATEGORY : Chemical Technology, Chemical Products and Their Applications, Food Industry

ABS. JOUR. : RZhKhim., No 19, 1959, No. 64593

AUTHOR : Pyshin, V.

ORIG. PUB. : reserves, Dnepropetrovsk
Ceskosl. hyg., 1959, 3, No 1, 45-47

ABSTRACT : Microbiological tests were conducted on the spoiled preserves the samples of which in the cultivation at 37° yielded positive results. In these instances, thermophilic microorganisms were ensial for the spoilage, bacillus, thermophilus (in the pork preserves with rice or peas, in beef reserves containing beans, or beef with vegetables and rice), Clostridium thermo-acetolvticum (pork in its own gravy) and Clostridium rigrificans (vegetable preserves) were identified. The methods of cultivation

Card: 1/2

CZECHOSLOVAKIA / Chemical Technology. Chemical Prod- H-28
ucts and Their Applications. Food
Industry.

Abs Jour: Ref Zhur-Khimiya, No 6, 1968, 100-2.

Author : Muzikar, J.

Inst : Not given.

Title : Determination and Evaluation of Saprophytic Micro-
flora in Salt-Water Fish.

Orig Pub: Prumysl. Chem., 1968, 8, No 1, 7-11.

Abstract: A microbiological study is made of frozen and re-
frigerated salt-water fish (Icelandic, Norwegian,
Swedish, Danish herrings, tuna, mackerel and
others). The species of microflora found are
given. The finding of a large number of psychro-
phylic microflora indicates the beginning of de-
composition processes in fish. -- E. Tkachin-
skaya.

Card 1/1

122

MUZIKAR, V.; DVORACEK, M.

Problems of occurrence and action of anaerobic microorganisms on the quality of meat and meat products. p. 474.

CESKOSLOVENSKA HYGIENA. Praha, Czechoslovakia. Vol. 4, no. 8, Sept. 1959.

Monthly list of East European Accessions (EEAI) LC, Vol. 9, no. 1, January 1960.

Uncl.

MUZIAR, V.; LION, B.

Causes of microbial contamination of beer. Cesk. hyg. 7 no.10:
622-626 D '62.

1. Krajska hygienicko-epidemiologicka stanice, Usti n. L.
(BEER) (ESCHERICHIA COLI INFECTIONS) (AEROBACTER AEROGENES)

MUZIKAR, Vilem, PhMr., ORSZAGHOVA, Venterova, inst.

Principles in establishing microbiological quality standards.
Prum potravin 15 no.11:568-569 N 16..

1. State Inspection of Food Industry product quality, Prague
(for Muzikar).
2. Ceskoslovenske cokoladovny National Enterprise, Prague
(for Orszaghova).

BARTL, Vladimir, RNDr., M. Lukš, Vilem, PhDr.; BARTLOVA, Lenka, Mgr.,
promovaný biolog

Controlling the quality of bakery yeast. *Průmyslová biologie*
no.11:582-583 N 1964.

1. State Inspection of the Food Industry Product Quality,
Prague (for Bartl and Muzikar).
2. Research Institute of the Flour Mill and Bakery Industry,
Brno (for Bartlova).

BARTL, Vladimir, RNDr.; MUZIKAR, Vilem, PhMr.; JILKOVA, Jirina, RNDr.

Food poisoning and how to prevent it. Prum otravin 16 no 1:
32-37 Ja '65.

1. State Inspection of the Food Product Quality, Prague.
Submitted August 23, 1964.

MUZIKOVA-HLADITSOVA, M.

**Extraction, physical and chemical properties and determination
of mucin from *Linum usitatissimum* L. Sloven.lek. 19 no.4:1-16
Mr '50. (CLML 19:3)**

**1. Author is Assistant in Institute of Biology of the Medical
Faculty of Slovak University in Bratislava.**

MUZIKOVA-HLADICOVA, M.

Potassium in the treatment of scleroderma. Cesk.derm. 26 no.1:
1-8 Jan 51. (CLML 20:6)

1. Of the Dermatological Clinic in Bratislava (Head--Prof.J.Treger
M.D.) and of the Biological Institute of Slovak University, Bratis-
lava (Head--Docent Vlad. Vrsansky,M.D.).

TREGER, J.; MOYS, A.; MUZIKOVA, M.

*Effect of intracutaneous biotin in eczema seborrhoeicum. Bratisl.
lek. listy 31 no.5-6:562-568 1951. (CML 21:2)*

1. Of the Dermatological Clinic of Slovak University, Bratislava
and of the Institute of Biology of Slovak University, Bratislava.

TREGER, J.; MOYS, A.; MUZIKOVA, M.

Effect of intracutaneous injections on the whole organism. Cesk. dermat.
28 no. 1:20-31 Jan 1953. (CLML 24:2)

1. Of the Dermatological Clinic of Slovak University, Bratislava.

TREJER, J.; MOYS, A.; MUZIKOVA, M.

Effect of intracutaneous injections on the whole organism. Cesk. dermat.
28 no. 1:31-36 Jan 1953. (CLML 24:2)

1. Of the Dermatological Clinic of Slovak University, Bratislava.